Blood Grouping and Antibody testing in pregnancy –

Supporting exercise model answers

Clinical Details

Patient 1 is a pregnant 30 year old female with history of a pregnancy 2 years ago. No atypical red cell antibodies have been detected. The sample was taken at booking.

Look at panel for patient 1. What antibody/antibodies are detected?

Anti-c ± anti-E

What antibodies cannot be excluded? (Explain why they cannot be excluded)

Anti-E cannot be exclude from the panels provided. Anti-K cannot be excuded as there is no homozygous K positive c negative cell to use for exclusions.

What further testing would you perform on the sample?

- Rh phenotype
- Send sample to NHSBT for anti-c quantitation

Would you request other samples?

Yes

If yes, what samples would you request and what would you test for?

Paternal sample for Rh phenotyping

Explain the clinical significance of the antibody detected in this case.

Antibodies of IgG subclass can cross the placenta. If the red cells of the foetus express the corresponding antigen the antibodies can bind and cause haemolysis. Anti-c is associated with severe haemolytic disease of the foetus and new born. The antibody is quantified.

Anti-c <7.5 IU/mL = unlikely to cause HDFN

Anti-c 7.5-20 IU/mL = moderate risk of HDFN

Anti-c >20 IU/mL = severe risk of HDFN

How often would you test this patient during pregnancy?

Every 4 weeks to 28 weeks then every 2 weeks until delivery.

What samples would you request at delivery and what tests would you perform?

Maternal sample – to check antibody level and use for crossmatching if baby requires blood transfusion.

Cord sample - ABO and Rh grouping, antibody screen, Rh phenotype, DAT, eluate if DAT positive.

A DAT tested at delivery was positive for IgG. Explain why this might be so and the significance of this result.

The baby has inherited the c antigen from the father. The anti-c from the mother has crossed the placenta and bound to the baby's red cells and may cause haemolysis. A phenotype may be inaccurate if antibody is significantly high enough to bind to all antigen sites on the baby's red cells. If enough sample an eluate should be performed.

If the mother required a blood transfusion post natally what blood would you select? (Note: the mother typed as R1R1). What type of crossmatch would you perform?

Select ABO compatible, c-, E-, K- red cell units for crossmatching by IAT

If the baby needed a transfusion post delivery what blood would you select and how would you crossmatch the red cell units? What additional requirements would you select if the baby had received an intrauterine transfusion? (Note: the baby typed as R1r)

Select ABO group compatible with both mother and baby, E-, c- K- units and crossmatch against maternal sample. If the baby had received a intrauterine transfusion select units that are irradiated. If an exchange transfusion is required order exchange units.